manufacturing production line using a virtual kanban system
and a manufacturing execution system comprising:

said manufacturing execution system for automatically
controlling routing of product lots and production inputs in
said manufacturing production line based on a production
scheduling model, wherein feedback data from said production
line is provided to said manufacturing execution system;

a database for storing said model and said feedback data,
wherein said feedback data is used to provide values for
variables of said model; and

a simulating system for simulating operation of said
production line according to said model, said simulating
system using said feedback data from said database in
performing said simulation, said simulating system further
comprising a user interface through which changes to said
model can be made;

wherein said manufacturing execution system monitors
consumption of said production inputs and orders additional
production inputs using electronic kanbans which are cycled in
response to said feedback data;

wherein said feedback data is divided into two sets of
data received by said manufacturing execution system in
separate transmissions of said feedback data;

wherein a first of said two sets of data comprises data specifying a type of equipment in said production line;

wherein a second of said two sets of data comprises data specifying an operating status of said equipment, status of said product lots and status of said production inputs; and

wherein said manufacturing execution system rechecks a routing schedule for said production inputs and said product lots each time a transmission of said second set of feedback data is received.

8.   (once amended; rewritten as an independent claim)

[The system of claim 7,] A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution system comprising:

said manufacturing execution system for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

a database for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

a simulating system for simulating operation of said

production line according to said model, said simulating

system using said feedback data from said database in

performing said simulation, said simulating system further

comprising a user interface through which changes to said

model can be made;

wherein said manufacturing execution system monitors

consumption of said production inputs and orders additional

production inputs using electronic kanbans which are cycled in

response to said feedback data;

wherein said manufacturing execution system also

determines a capacity of said equipment in said production

line based on said feedback data and generates routes for said

product lots in accordance therewith; and

wherein said manufacturing execution system scans

generated routes for equipment in said production line without

a determined capacity to determine potential problem areas in

said generated routes.

11.   (once amended; rewritten as an independent claim)

[The system of claim 10,] A system for controlling a

manufacturing production line using a virtual kanban system

and a manufacturing execution system comprising:

said manufacturing execution system for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution system;

a database for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

a simulating system for simulating operation of said production line according to said model, said simulating system using said feedback data from said database in performing said simulation, said simulating system further comprising a user interface through which changes to said model can be made;

wherein said manufacturing execution system monitors consumption of said production inputs and orders additional production inputs using electronic kanbans which are cycled in response to said feedback data;

wherein said manufacturing execution system generates a kanban parameter for each piece of said equipment in said production line which uses a production input; and

wherein said manufacturing execution system generates proposed kanban stages within said production line defined in accordance with said kanban parameters.

17.   (once amended; rewritten as an independent claim)

[The system of claim 16,] A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution control means comprising:

said manufacturing execution control means for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution control means;

database means for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

simulating means for simulating operation of said production line according to said model, said simulating means using said feedback data from said database means in performing said simulation, said simulating means further comprising a user interface means through which changes to said model can be made;

wherein said manufacturing execution control means monitor consumption of said production inputs and order additional production inputs using electronic kanbans which are cycled in response to said feedback data; and

wherein said manufacturing execution control means rechecks a routing schedule for said production inputs and said product lots each time a transmission [of said second set] of feedback data is received specifying an operating status of said equipment, status of said product lots and status of said production inputs.

19.   (once amended; rewritten as an independent claim)

[The system of claim 18,] A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution control means comprising:

said manufacturing execution control means for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution control means;

database means for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

simulating means for simulating operation of said production line according to said model, said simulating means using said feedback data from said database means in performing said simulation, said simulating means further comprising a user interface means through which changes to said model can be made;

wherein said manufacturing execution control means monitor consumption of said production inputs and order additional production inputs using electronic kanbans which are cycled in response to said feedback data;

wherein said manufacturing execution control means determines a capacity of said equipment in said production line based on said feedback data and generates routes for said product lots in accordance therewith; and

wherein said manufacturing execution control means scans generated routes for equipment in said production line without a determined capacity to determine potential problem areas in said generated routes.

22.   (once amended; rewritten as an independent claim)

[The system of claim 21,] A system for controlling a manufacturing production line using a virtual kanban system and a manufacturing execution control means comprising:

said manufacturing execution control means for automatically controlling routing of product lots and production inputs in said manufacturing production line based on a production scheduling model, wherein feedback data from said production line is provided to said manufacturing execution control means;

database means for storing said model and said feedback data, wherein said feedback data is used to provide values for variables of said model; and

simulating means for simulating operation of said production line according to said model, said simulating means using said feedback data from said database means in performing said simulation, said simulating means further comprising a user interface means through which changes to said model can be made;

wherein said manufacturing execution control means monitor consumption of said production inputs and order additional production inputs using electronic kanbans which are cycled in response to said feedback data; and

wherein said manufacturing execution control means
generates a kanban parameter for each piece of said equipment
in said production line which uses a production input; and

wherein said manufacturing execution control means
generate proposed kanban stages within said production line
defined in accordance with said kanban parameters.

29.   (once amended; rewritten as an independent claim)

[The method of claim 28,] A method for controlling a
manufacturing production line using a virtual kanban system,
the method comprising:

automatically controlling routing of product lots and
production inputs in said manufacturing production line with a
manufacturing execution system using a production scheduling
model, wherein feedback data from said production line is
provided to said manufacturing execution system;

storing said model and said feedback data in a database,
wherein said feedback data is used to provide values for
variables of said model;

simulating operation of said production line according to
said model with a simulating system, said simulating system
using said feedback data from said database in performing said
simulation;

monitoring consumption of said production inputs with said

manufacturing execution system and ordering additional

production inputs using electronic kanbans which are cycled in

response to said feedback data; and

[further comprising] rechecking a routing schedule for

said production inputs and said product lots each time a

transmission of said [second set of] feedback data is received

specifying an operating status of said equipment, status of

said product lots and status of said production inputs.

31.   (once amended; rewritten as an independent claim)

[The method of claim 30, further comprising] A method for

controlling a manufacturing production line using a virtual

kanban system, the method comprising:

automatically controlling routing of product lots and

production inputs in said manufacturing production line with a

manufacturing execution system using a production scheduling

model, wherein feedback data from said production line is

provided to said manufacturing execution system;

storing said model and said feedback data in a database,

wherein said feedback data is used to provide values for

variables of said model;

simulating operation of said production line according to said model with a simulating system, said simulating system using said feedback data from said database in performing said simulation;

monitoring consumption of said production inputs with said manufacturing execution system and ordering additional production inputs using electronic kanbans which are cycled in response to said feedback data;

determining a capacity of said equipment in said production line based on said feedback data and generating routes for said product lots in accordance therewith; and

scanning generated routes for equipment in said production line without a determined capacity to determine potential problem areas in said generated routes.

34.   (once amended; rewritten as an independent claim)

[The method of claim 33, further comprising] A method for controlling a manufacturing production line using a virtual kanban system, the method comprising:

automatically controlling routing of product lots and production inputs in said manufacturing production line with a manufacturing execution system using a production scheduling

model, wherein feedback data from said production line is provided to said manufacturing execution system;

storing said model and said feedback data in a database, wherein said feedback data is used to provide values for variables of said model;

simulating operation of said production line according to said model with a simulating system, said simulating system using said feedback data from said database in performing said simulation;

monitoring consumption of said production inputs with said manufacturing execution system and ordering additional production inputs using electronic kanbans which are cycled in response to said feedback data;

generating a kanban parameter with said manufacturing execution system for each piece of equipment in said production line which uses a production input; and

generating proposed kanban stages within said production line in accordance with said kanban parameters.